Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A process for transmitting data on a bus, minimizing switching activity on the bus itself, the process involving conversion of the data between a first format and a second format, said second format being used for transmission on said bus, the process comprising:

converting between said first format and said second format by swapping of position of respective bits within a cluster having a given number of bits, said swapping being implementable according to a plurality of different variants, a maximum number of said variants being equal to a factorial value of said given number, each of said variants being identified by a respective swap pattern;

selecting, among said patterns, an optimal pattern such as to minimize the switching activity at a moment of transmission of data on said bus; and

transmitting said data on said bus using said second format generated using said optimal pattern.

2. (Original) The process according to claim 1, further comprising:

generating, starting from said data in said first format, a plurality of sets of data in said second format obtained using a plurality of said patterns;

detecting said switching activity at said plurality of sets of data in said second format;

selecting, starting from said plurality of sets of data in said second format, output data corresponding to said minimum switching activity; and

selecting the optimal pattern as corresponding to said data with minimum switching activity.

3. (Original) The process according to claim 1, further comprising:

considering said bus, which has a total number of lines, as formed by a plurality of buses each having a number of lines which is substantially smaller than said total number; and

identifying a swap pattern, said swap pattern being identical for all of said buses of said plurality.

4. (Original) The process according to claim 3, further comprising selecting said pattern identical for all the buses of said plurality as a pattern such as to produce a global minimum value of switching activity of all the buses of said plurality.

5. (Original) The process according to claim 1, further comprising identifying said optimal pattern as a data string having a given number of bits and transmitting said data string on said bus.

6. (Original) The process according to claim 5, further comprising providing additional lines on said bus for transmitting said data string identifying said optimal pattern.

7. (Original) The process according to claim 6, further comprising subjecting said data string identifying said optimal pattern to a compression operation in view of transmission on said bus.

8. (Original) The process according to claim 7 wherein said compression of said data string identifying said optimal pattern is performed with a truth table.

9. (Currently Amended) The process according to ~~any one of~~ claim 5, further comprising subjecting said data string identifying said optimal pattern to processing, including processing of the bus-inverted type, in view of transmission on said bus.

10. (Original) The process according to claim 1 wherein selecting said optimal pattern includes making successive attempts at measuring switching activity between an attempt function at a given instant and a set of data in said second format detected at a previous instant in time.

11. (Original) The process according to claim 10 wherein said switching activity is measured as distance, including as Hamming distance, between said attempt function at the given instant and said set of data in said second format detected at the previous instant in time.

12. (Currently Amended) The process according to claim 11 wherein said attempt function is chosen in a group made up of:

I. $\tilde{B}(t) = S(b(t), \tilde{p})$;

II. $\tilde{B}(t) = S(b(t), \tilde{p}) \oplus S^{-1}(b(t-1), \tilde{p})$;

III. $\tilde{B}(t) = S(b(t), \tilde{p}) \oplus S^{-1}(B(t-1), \tilde{p})$,

~~where~~ wherein $\tilde{B}(t)$ is said attempt function~~;~~;

wherein b(t) is said first format;

wherein B(t) is said second format;

wherein P(t) is said swap pattern;

S(.) is a swap function that generates the output data in said second format B(t) as a function of said data in said first format b(t) and of said pattern (P_t); and

$\tilde{p}$ represents a generic attempt pattern whereby, when $\tilde{p}$ becomes an optimal attempt pattern (P_t) then $B(t) = \tilde{B}(t)$.

13. (Original) A device for transmitting data on a bus, minimizing switching activity on the bus itself, the device being configured for converting the data between a first format and a second format, said second format being used for transmission on said bus, the device comprising:

at least one swap module to convert said data between said first format and said second format by swapping a position of respective bits within a given cluster having a given number of bits, said swap being implementable according to different variants, a maximum number of said variants being equal to a factorial value of said given number, each of said variants being identified by a respective swap pattern;

at least one module to identify, among said patterns, an optimal pattern such as to minimize the switching activity at a moment of transmission of the data on said bus; and

at least one transmission element to exchange said data on said bus using said second format generated using said optimal pattern.

14. (Original) The device according to claim 13, further comprising:

first circuit elements to generate, starting from said data in said first format, a plurality of sets of data in said second format obtained using a plurality of said patterns;

second circuit elements to measure said switching activity at said plurality of sets of data in said second format; and

third circuit elements to select, starting from said plurality of sets of data in said second format, output data corresponding to said minimum switching activity and to select the optimal pattern as corresponding to said data with minimum switching activity.

15. (Currently Amended) The device according to ~~either~~ claim 13 wherein said bus, which has a total number of lines, is configured as a plurality of buses each having a number of lines which is substantially smaller than said total number, and wherein said at least one transmission element is configured to transmit said data on said plurality of buses using data in said second format generated with a swap pattern that is identical for all the buses of said plurality.

16. (Original) The device according to claim 15 wherein said pattern identical for all the buses of said plurality is a pattern such as to produce a global minimum value of switching activity on all the buses of said plurality.

17. (Original) The device according to any one of claim 13 wherein said at least one module to identify identifies said optimal pattern as a data string having a given number of bits, and wherein said at least one transmission element is configured to transmit said data string on said bus.

18. (Original) The device according to claim 17 wherein said bus includes additional lines to transmit said pattern.

19. (Original) The device according to claim 17, further comprising at least one compression module to subject said data string which expresses said optimal pattern to a compression operation in view of transmission on said bus.

20. (Original) The device according to claim 19 wherein said compression module comprises a truth table.

21. (Original) The device according claim 17, further comprising at least one processing module to subject said data string identifying said optimal pattern to processing, including processing of a bus-inverted type, in view of transmission on said bus.

22. (Original) The device according to claim 14 wherein said second and third circuit elements are configured to select said optimal pattern by making successive attempts to measure switching activity between an attempt function at a given instant and a set of data in said second format detected at a previous instant in time.

23. (Original) The device according to claim 22, further comprising a computation module to compute said activity as a Hamming distance.

24. (Currently Amended) The device according to claim 22 wherein said attempt function is chosen in a group made up of:

I. $B^{\sim}(t) = S(b(t), p^{\sim})$;

II. $B^{\sim}(t) = S(b(t), p^{\sim}) \oplus S^{-1}(b(t-1), p^{\sim})$;

III. $B^{\sim}(t) = S(b(t), p^{\sim}) \oplus S^{-1}(B(t-1), p^{\sim})$,

~~where~~ wherein $B^{\sim}(t)$ is said attempt function~~,~~;

wherein b(t) is said first format;

wherein B(t) is said second format;

wherein P(t) is said swap pattern;

S(.) is a swap function that generates the output data in said second format B(t) as a function of said data in said first format b(t) and of said pattern (P_t); and

$p^{\sim}$ represents a generic attempt pattern wherein, when $p^{\sim}$ becomes an optimal attempt pattern (P_t) then $B(t) = B^{\sim}(t)$.

25. (Currently Amended) The device according to claim 17 wherein ~~components~~ said at least one swap module and said at least one module to identify the optimal pattern are organized in a form of a plurality of units operating in parallel on said data.

26. (Currently Amended) The device according to claim 25, further comprising ~~wherein the components include~~ a plurality of computing units each of which is configured to compute a respective value of switching activity using a respective pattern.

27. (Currently Amended) The device according to claim 26 wherein said computing units of said plurality constitute a combinatorial logic network which can operate in an absence of a clock signal.

28. (Original) The device according to claim 26, further comprising a combinatorial unit configured so as to select a lowest of these values of switching activity.

29. (Original) The device according to claim 28, further comprising a first multiplexer and a second multiplexer driven by said combinatorial unit and associated, respectively, to output datum and to the output pattern.

30. (Original) The device according to claim 26 wherein said computing units of said plurality are equal in number to said variants identified by a respective pattern.

31. (Original) The device according to claim 26 wherein said computing units of said plurality are equal in number to a subset of a value of said variants identified by a respective pattern.

32. (Original) An article of manufacture usable with a processor associated to a bus, the article of manufacture comprising:

a machine-readable medium having instructions stored thereon to cause a processor to transmit data on the bus and minimize switching activity on the bus, by:

converting data between a first format to a second format usable for transmission on the bus, by swapping of position of respective bits within a cluster having a given number of bits, the swapping being implementable according to a plurality of different variants, a maximum number of the variants being equal to a factorial value of the given number, each of the variants being identified by a respective swap pattern;

selecting one of the patterns corresponding to a minimum of the switching activity at transmission of data on the bus; and

transmitting data on the bus using the second format, which is generated based on the selected pattern.

33. (Original) The article of manufacture of claim 32 wherein the machine-readable medium further has instructions stored thereon to:

generate, starting from the data in the first format, a plurality of sets of data in the second format obtained based on a plurality of the patterns;

detect the switching activity at the plurality of sets of data in the second format;

select, starting for the plurality of sets of data in the second format, output data associated with the minimum switching activity; and

select the one pattern as corresponding to the output data associated with the minimum switching activity.

34. (Original) The article of manufacture of claim 32 wherein the machine-readable medium further has instructions stored thereon to:

consider the bus, which has a total number of lines, as formed by a plurality of buses each having a number of lines that is smaller than the total number;

identify a swap pattern, the swap pattern being identical for the buses in the plurality; and

select the pattern identical for the buses as a pattern to produce a global minimum value of switching activity of all buses of the plurality of buses.

35. (Original) The article of manufacture of claim 32 wherein the machine-readable medium further includes instructions stored thereon to:

identify the one pattern as a data string having a given number of bits and transmit the data string on the bus;

provide additional lines on the bus to transmit the data string that identifies the one pattern; and

apply a compression operation to the data string that identifies the one pattern.

36. (Original) A system for transmitting data on a bus and for minimizing switching activity on the bus, the system comprising

a means for converting data between a first format to a second format usable for transmission on the bus, by swapping of position of respective bits within a cluster having a given number of bits, the swapping being implementable according to a plurality of different

variants, a maximum number of the variants being equal to a factorial value of the given number, each of the variants being identified by a respective swap pattern;

a means for selecting one of the patterns corresponding to a minimum of the switching activity at transmission of data on the bus; and

a means for transmitting data on the bus using the second format, which is generated based on the selected pattern.

37. (Original) The system of claim 36, further comprising:

a means for generating, starting from the data in the first format, a plurality of sets of data in the second format obtained based on a plurality of the patterns;

a means for detecting the switching activity at the plurality of sets of data in the second format;

a means for selecting, starting for the plurality of sets of data in the second format, output data associated with the minimum switching activity; and

a means for selecting the one pattern as corresponding to the output data associated with the minimum switching activity.

38. (Original) The system of claim 36, further comprising:

a means for considering the bus, which has a total number of lines, as formed by a plurality of buses each having a number of lines that is smaller than the total number;

a means for identifying a swap pattern, the swap pattern being identical for the buses in the plurality; and

a means for selecting the pattern identical for the buses as a pattern to produce a global minimum value of switching activity of all buses of the plurality of buses.

39. (Original) The system of claim 36, further comprising:

a means for identify the one pattern as a data string having a given number of bits and transmit the data string on the bus;

a means for providing additional lines on the bus to transmit the data string that identifies the one pattern; and

a means for applying a compression operation to the data string that identifies the one pattern.

40. (Original) The system of claim 36 wherein the means for selecting one of the patterns includes a means for making successive attempts at measuring switching activity between an attempt function at a given instant in time and a set of data in the second format detected at a previous instant in time, including a means for measuring the switching activity as a distance between the attempt function at the given instant and the set of data in the second format detected at the previous instant.